

Math 171 - Quiz 2

August 29, 2018

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

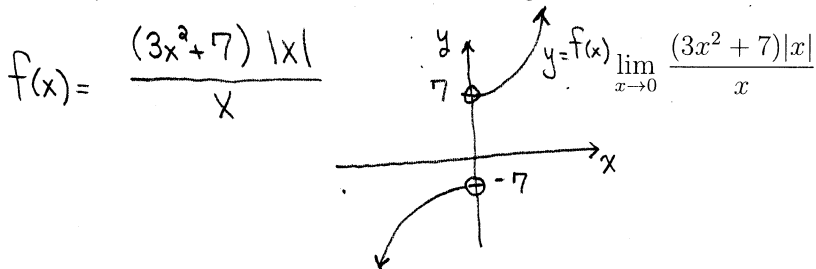
1. (3 points) Use a table of values to estimate the following limit. Your table must show function values at six or more points. (Be in radian mode!)

x	f(x)	x	f(x)
-0.1	0.53007	0.1	0.53007
-0.01	0.40104	0.01	0.40104
-0.001	0.40001	0.001	0.40001
0.0001	0.40000	0.0001	0.40000

$$\lim_{x \rightarrow 0} \frac{\tan 2x}{5x \cos 7x}$$

IT LOOKS LIKE THE LIMIT IS 0.4.

2. (2 points) We discussed four common ways a limit can fail to exist. In which of the four ways does the following limit fail to exist? Briefly explain your reasoning.



THE LIMIT FROM ONE SIDE OF $x=0$ IS NOT EQUAL TO THE LIMIT FROM THE OTHER SIDE OF $x=0$.

3. (2 points) Why can't the limit laws be used to evaluate the following limit? (You need not evaluate the actual limit.)

$$\lim_{x \rightarrow 2} \frac{x^2 - 5x + 6}{x - 2}$$

THE LIMIT LAWS WOULD GIVE US A ZERO DENOMINATOR. WE CANNOT USE THEM IN THIS CASE.

4. (3 points) Evaluate each limit analytically. DO NOT USE A CALCULATOR.

(a) $\lim_{x \rightarrow 9} (5\sqrt{x} - \sin(\pi x) + x^2 - 1)$
 $= 5\sqrt{9} - \sin 9\pi + (9)^2 - 1 = 15 - 0 + 81 - 1 = 95$

(b) $\lim_{x \rightarrow 3} \frac{x^3 - 7x}{2x^2 - x} = \frac{3^3 - 7(3)}{2(3)^2 - 3} = \frac{27 - 21}{18 - 3} = \frac{6}{15} = \frac{2}{5}$